

CLAIMS

What is claimed is:

1. A flat fluorescent lamp, comprising:
5 a back substrate;
a front substrate made of a transparent material and mounted on the back substrate through a sealing member disposed therebetween, to be spaced from the back substrate by a predetermined interval;
a plurality of partitions alternately disposed between the back substrate and the front
10 substrate to define a discharge channel of a zigzag shape therebetween;
a fluorescent material layer coated along a surface of the discharge channel defined by the partitions;
a plurality of electrodes disposed to at least one of an outer surface of the back substrate and an outer surface of the front substrate to cause a dielectric barrier discharge; and
15 a reflective layer to cover the entire back substrate and upper portions of the electrodes disposed to the back substrate.
2. The flat fluorescent lamp as defined in claim 1, wherein the partitions are integrally formed with the back substrate.
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3. The flat fluorescent lamp as defined in claim 1, wherein the partitions are made of the same transparent material as the front substrate, and are integrally formed with the front substrate.
4. The flat fluorescent lamp as defined in claim 1, wherein the partitions comprise first
25 partitions integrally formed with the back substrate, and second partitions integrally formed with the front substrate.

5. The flat fluorescent lamp as defined in claim 4, wherein the first partitions and the second partitions are disposed alternately.

6. The flat fluorescent lamp as defined in claim 1, wherein the electrodes are symmetrically
5 disposed in strip shapes on both the back substrate and the front substrate, whereby the electrodes of the back substrate are in parallel with the electrodes of the front substrate.

7. The flat fluorescent lamp as defined in claim 1, further comprising a plurality of floating electrodes disposed between the electrodes of the back substrate.

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8. The flat fluorescent lamp as defined in claim 6, further comprising a plurality of floating electrodes disposed between the electrodes of the back substrate.

9. The flat fluorescent lamp as defined in claim 1, wherein the electrodes of the back substrate
15 have a plurality of apertures formed symmetrically with respect to the center line of the back substrate, and the apertures are formed in stripe-, circle-, polygon-, or mesh-shapes.

10. The flat fluorescent lamp as defined in claim 1, wherein the apertures of the electrodes are formed to have sizes decreasing gradually from an inner side of each electrode to an outer side
20 thereof.

11. The flat fluorescent lamp as defined in claim 8, wherein the apertures of the electrodes are formed to have sizes decreasing gradually from an inner side of each electrode to an outer side thereof.

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12. The flat fluorescent lamp as defined in claim 1, wherein the reflective layer comprises a mixture of a glass material and a white ceramic material including Al_2O_3 , TiO_2 , and WO_3 , and is coated at a thickness not less than 20 μm .

5 13. A backlight lamp, comprising:

a flat fluorescent lamp, including a back substrate, a front substrate made of a transparent material and mounted on the back substrate through a sealing member disposed therebetween to be spaced from the back substrate by a predetermined interval, a plurality of partitions alternately disposed between the back substrate and the front substrate to define a discharge channel of a
10 zigzag shape therebetween, a fluorescent material layer coated along a surface of the discharge channel defined by the partitions, a plurality of electrodes disposed to both the back substrate and the front substrate to cause a dielectric barrier discharge, and a reflective layer to cover the entire back substrate and upper portions of the electrodes disposed to the back substrate;

a light diffusion part spaced from an upper portion of the front substrate of the flat
15 fluorescent lamp to diffuse light irradiated from the flat fluorescent lamp;

an insulating layer disposed under the reflective layer of the flat fluorescent lamp through a first adhesive layer; and

a base member disposed under the insulating layer through a second adhesive layer.

14. A backlight lamp, comprising:

a flat fluorescent lamp, including a back substrate, a front substrate made of a transparent material and mounted on the back substrate through a sealing member disposed therebetween to be spaced from the back substrate by a predetermined interval, a plurality of partitions disposed
5 between the back and front substrates and having odd number of partitions in close contact with the sealing member disposed at one side edge of the back substrate and even number of partitions in close contact with the sealing member disposed at the other side edge of the back substrate to define a discharge channel of a zigzag shape between the back substrate and the front substrate, a fluorescent material layer coated along a surface of the discharge channel defined by the partitions,
10 and a plurality of electrodes disposed to both the back substrate and the front substrate to cause a dielectric barrier discharge;

a light diffusion part spaced from an upper portion of the front substrate of the flat fluorescent lamp to diffuse light irradiated from the flat fluorescent lamp;

an insulating reflective layer disposed under the electrodes of the back substrate of the flat
15 fluorescent lamp through a first adhesive layer; and

a base member disposed under the insulating reflective layer through a second adhesive layer.

15. The backlight lamp as defined in claim 11, wherein the light diffusion part comprises a
20 transparent plate to transmit light of the flat fluorescent lamp, and a diffusion plate disposed to be in contact with the transparent plate to diffuse the light.

16. The backlight lamp as defined in claim 12, wherein the light diffusion part comprises a
transparent plate to transmit light of the flat fluorescent lamp, and a diffusion plate disposed to be in
25 contact with the transparent plate to diffuse the light.

17. The backlight lamp as defined in claim 11, wherein the light diffusion part comprises an acryl plate having diffusibility.

18. The backlight lamp as defined in claim 12, wherein the light diffusion part comprises an
5 acryl plate having diffusibility.

19. The backlight lamp as defined in claim 14, wherein the diffusion plate comprises a diffusible film or an acryl plate.

10 20. The backlight lamp as defined in claim 11, wherein the discharge channel defined by the partitions has a pitch of 5 to 15 mm.

21. The backlight lamp as defined in claim 12, wherein the discharge channel defined by the partitions has a pitch of 5 to 15 mm.

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